

REMARKS

I. Status of Claims

Claims 35-68 are currently pending in this application.

II. Rejections under 35 U.S.C. § 103(a)

A. The Office rejects claims 35-44, 56-58, 60, and 61 under 35 U.S.C. § 103(a) as being unpatentable over Japanese Patent No. 02249707 to Ohashi ("Ohashi"), for the reasons provided at pages 2-5 of the Office Action.

With respect to obviousness, several basic factual inquiries must be made in order to determine the obviousness or non-obviousness of claims under 35 U.S.C. § 103. These factual inquiries, set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 U.S.P.Q. 459, 467 (1966), require the Office to:

- (1) Determine the scope and content of the prior art;
- (2) Ascertain the differences between the prior art and the claims in issue;
- (3) Resolve the level of ordinary skill in the pertinent art; and
- (4) Evaluate evidence of secondary considerations.

The obviousness or nonobviousness of the claimed invention is then evaluated in view of the results of these inquiries. *Graham*, 383 U.S. at 17-18, 148 U.S.P.Q. at 467; *see also KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1730, 82 U.S.P.Q.2d 1385, 1388 (2007).

According to the Office, "[w]hile the reference fails to expressly disclose the respective compressive moduli, one of ordinary skill in the art at the time of the invention would have expected the disclosed elastomeric materials of Ohashi to satisfy

the claimed compressive modulus relationship...” See Office Action at 2. The Office asserts, “a composition designed to improve abrasion resistance and having a greater modulus of elasticity (as compared to an additional composition) would be expected to demonstrate a greater hardness.” *Id.* Applicants respectfully disagree for the reasons of record and for the following additional reasons.

As detailed in the August 12, 2009 Response, there is no evidence that the claimed tires are expressly or inherently disclosed by Ohashi. To further support this conclusion, as suggested by the Examiner during the interview, Applicants have replicated the examples of Ohashi. The results, detailed below, show that NONE of the Ohashi embodiments or comparisons meet the ratios of hardness and modulus under compression, as claimed.

Applicants replicated Compositions A to E from Table 1 of Ohashi. Declaration of De Cancellis at ¶¶ 5-6. Since Ohashi did not provide vulcanization conditions, Applicants replicated Compositions A to E twice—under conditions suitable for Ultra-High Performance (UHP) tires and under conditions suitable for non-Ultra-High Performance tires. *Id.* at ¶ 7. For each of the ten samples, Applicants tested for both IRHD hardness and modulus of elasticity under compression (MPa) at both room temperature (23°C) and the claimed temperature (100°C). *Id.* at ¶ 8. Using this data and the eleven composition pairs identified in Ohashi Table 2, Applicants calculated the following claimed ratios:

	C1	C2	C3	E1	E2	C4	E3	C5	C6	C7	C8
Central (first)	B	A	A	B	B	C	C	C	D	D	D
Peripheral (second)	B	C	D	C	D	C	D	E	D	C	E
Ratio											
IRHD (100°C) UHP	1.00	1.15	1.00	1.07	0.93	1.00	0.87	0.93	1.00	1.15	1.07
E' (100°C) UHP	1.00	1.53	1.21	1.23	0.97	1.00	0.79	0.94	1.00	1.26	1.19
IRHD (100°C) non-UHP	1.00	1.16	1.01	1.18	1.02	1.00	0.86	0.93	1.00	1.16	1.08
E' (100°C) non-UHP	1.00	1.59	1.25	1.29	1.02	1.00	0.79	0.97	1.00	1.27	1.23

C = comparison in Ohashi; E = embodiment in Ohashi; **Bold** = pass

As seen in the above table, NONE of the combinations from Ohashi, whether vulcanized under UHP conditions or non-UHP conditions, have a ratio of second material to first material for IRHD hardness lower than about 1.10, AND have a ratio of second material to first material for modulus of elasticity under compression not lower than about 1.30. *Id.* at ¶ 11. Some compositions could meet one limitation or the other. Embodiment 1 (non-UHP) and comparative 7 (both UHP and non-UHP) could not meet either limitation.

Similarly, the Office's assumption that "EACH of the first and second elastomeric materials would be expected to demonstrate a decrease in modulus at elevated temperatures, such that the claimed ratio would not be expected to deviate significantly from that of room temperature" (office action at 9), has been proven incorrect. While

Table 2 of the Declaration shows that modulus does decrease for a given composition, they do not decrease at the same rates. Declaration at ¶ 8. That data yields the following table:

	C1	C2	C3	E1	E2	C4	E3	C5	C6	C7	C8
Central (first)	B	A	A	B	B	C	C	C	D	D	D
Peripheral (second)	B	C	D	C	D	C	D	E	D	C	E
Ratio											
E' (23°C) UHP		1.49	1.50	1.18	1.19		1.00	1.23		1.00	1.23
E' (100°C) UHP		1.53	1.21	1.23	0.97		0.79	0.94		1.26	1.19
E' (23°C) non-UHP		1.56	1.58	1.24	1.25		1.01	1.30		0.99	1.29
E' (100°C) non-UHP		1.59	1.25	1.29	1.02		0.79	0.97		1.27	1.23

As seen in the above table, many of the Ohashi pairings exhibit significant deviations in their ratios for modulus of elasticity when comparing room temperature versus the claimed temperature of 100 °C. In fact, the relationship between C and E in Comparative 5 and between C and D in Embodiment 3, of both the UHP and non-UHP vulcanization conditions, flip when the temperature is raised from room temperature to 100°C. Similarly, the relationship between B and D in Embodiment 2 (UHP vulcanization conditions) and between D and C in Comparative 7 (non-UHP vulcanization conditions) flip when the temperature is raised from room temperature to 100°C.

Thus, one of ordinary skill in the art could not reasonably reach any conclusion that Ohashi's data may even suggest the compositions could meet the claimed relationship. Further, the relationship has been established not to be inherent to a pair of compositions, irrespective of temperature, as the Office has suggested. *See* Office Action at 9-10.

Further, the Office assertion that there is a relationship between modulus and hardness (Office Action at 10-11) does not hold up under scrutiny. Rather, the experimental tests carried out confirm what is reported in the textbook presently on file (*Manuale della gomma* (Rubber Manual), Tecniche Nuove, Italian edition 1987, first German edition 1981, pp. 231-234) according to which the hardness test can be useful only roughly, but it cannot give sufficient information about the modulus. It certainly cannot be enough to establish as reasonable expectation of success.

Specifically, Applicants observe that, for example, if one considers the absolute values of the modulus of elasticity (E') under compression and of the IHRD hardness at 100°C of the rubber compositions E and B vulcanized according to the conditions for UHP tires, one may note that the rubber compositions E has a greater value of modulus (6.57 vs. 5.67) but, at the same time, has a **lower** value of hardness (65.5 vs. 65.7). *See* Declaration at ¶ 8. By the same token, if one considers the absolute values of the modulus of elasticity (E') under compression and of the IHRD hardness at 100°C of the rubber compositions A and B vulcanized according to the conditions for non-UHP tires, one may note that the rubber compositions B has a far greater value of modulus (5.47 vs. 4.45) but, at the same time, has a **lower** value of hardness (57.1 vs. 58.1). *Id.*

In fact, while the modulus ratio relationship between C and E in Comparative 5, C and D in Embodiment 3, B and D in Embodiment 2, and D and C in Comparative 7 flip when the temperature is raised from room temperature to 100 °C, as described above, that flip does not happen with their respective IRHD hardness ratio relationships. However, as seen below with data derived from Table 2 of the Declaration, the IRHD hardness ratio relationship between B and D in Embodiment 2 (non-UHP vulcanization conditions) and between D and E in Comparative 8 (non-UHP vulcanization conditions) do flip when the temperature is raised from room temperature to 100°C.

	C1	C2	C3	E1	E2	C4	E3	C5	C6	C7	C8
Central (first)	B	A	A	B	B	C	C	C	D	D	D
Peripheral (second)	B	C	D	C	D	C	D	E	D	C	E
Ratio											
IRHD (23°C) UHP		1.10	1.00	1.03	0.94		0.91	0.97		1.10	1.07
IRHD (100°C) UHP		1.15	1.00	1.07	0.93		0.87	0.93		1.15	1.07
IRHD (23°C) non-UHP		1.12	1.01	1.03	0.93		0.90	0.90		1.11	0.99
IRHD (100°C) non-UHP		1.16	1.01	1.18	1.02		0.86	0.93		1.16	1.08

Summarizing, Applicants conclude by saying that the experimental tests carried out confirm Applicants' positions, namely, that:

1) no inference whatsoever about the values of the **ratio** between the modulus of elasticity (E') under compression and of the IRHD hardness of the second elastomeric material and the modulus of elasticity (E') under compression and of the IRHD hardness of the first elastomeric material may be inferred from Ohashi even at room temperature, which is the reference temperature according to the teachings of this reference;

2) because no inference whatsoever about the values of the aforementioned **ratio** of the modulus of elasticity (E') under compression **under heat**, i.e. **at 100°C** and the values of the IRHD hardness, may be inferred from Ohashi, since the values the modulus of elasticity (E') and of the IRHD hardness vary along with temperature and, above all, vary in a different manner (according to a non- linear and unpredictable relationship only verifiable by way of experimentation) for any two different rubber compositions forming the central portion and the peripheral portion, respectively, of the blocks or ribs formed in the tread.

For at least these reasons, Ohashi fails to inherently disclose or render obvious all of the subject matter recited in independent claim 35. Further, claims 36-68 depend from independent claim 35 and should be patentably distinguishable from Ohashi for at least the same reasons as independent claim 35. Therefore, Applicants respectfully request reconsideration and withdrawal of the § 103(a) rejection of claims 35-68 based on Ohashi.

B. The Examiner rejects claims 45, 46, and 50-55 under 35 U.S.C. § 103(a) as being unpatentable over Ohashi in view of US Patent No. 5,006,603 to Takaki

("Takaki"), for the reasons provided at pages 5-6 of the Office Action. Applicants respectfully disagree.

Since claims 45, 46, and 50-55 depend from claim 35, which is not obvious over Ohashi for the reasons provided above, Applicants submit that claims 45, 46, and 50 are also not obvious over Ohashi and that Takaki cannot correct this deficiency in view of the experimental data. Accordingly, this rejection is also improper and should be withdrawn

C. The Examiner rejects claims 47-49 under 35 U.S.C. § 103(a) as being unpatentable over Ohashi in view of US Patent No. 6,598,645 to Larson ("Larson"), for the reasons provided at pages 6-7 of the Office Action. Applicants respectfully disagree.

Since claims 47-49 depend from claim 35, which is not obvious over Ohashi for the reasons provided above, Applicants submit that claims 47-49 are also not obvious over Ohashi and that Larson cannot correct this deficiency in view of the experimental data. Accordingly, this rejection is also improper and should be withdrawn.

D. The Examiner rejects claims 35, 59, and 62-68 under 35 U.S.C. § 103(a) as being unpatentable over Japanese Patent No. 53080602 to Fukuda ("Fukuda") and Ohashi, for the reasons provided at pages 7-9 of the Office Action. Applicants respectfully disagree.

While Fukuda may disclose a tire wherein the second elastomeric material provides higher wear resistance than the first elastomeric material, the Examiner has

not established that the compositions of Fukuda are comparable to the compositions of Ohashi. Nevertheless, even assuming the Examiner is correct about Fukuda, such evidence is insufficient to establish obviousness (whether alone or with Ohashi for substantially the same reasons provided in the August 12, 2009 Response and above.

Accordingly, this rejection is also improper and should be withdrawn.

IV. Conclusion

In view of the foregoing remarks, Applicants submit that this claimed invention is not rendered obvious in view of the prior art references cited against this application. Applicants therefore request the Examiner's reconsideration of the application and the timely allowance of the pending claims.

If the Examiner believes a telephone conference could be useful in resolving any outstanding issues, he is respectfully invited to contact Applicant's undersigned counsel at (202) 408-4275.

Please grant any extensions of time required to enter this response and charge any additional required fees to our Deposit Account No. 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

Dated: November 24, 2010

By: 

Anthony A. Hartmann
Reg. No. 43,662

Attachment: Declaration of Pierluigi De Cancellis